



Spectral Gamma-Ray Borehole
Log Data Report

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Borehole

40-03-01

Log Event A

Borehole Information

| | | |
|-------------------------|----------------------------------|----------------------------------|
| Farm : <u>S</u> | Tank : <u>S-103</u> | Site Number : <u>299-W23-151</u> |
| N-Coord : <u>36,266</u> | W-Coord : <u>75,846</u> | TOC Elevation : <u>663.30</u> |
| Water Level, ft : | Date Drilled : <u>10/31/1971</u> | |

Casing Record

| | | |
|----------------------------|--------------------------------|--------------------|
| Type : <u>Steel-welded</u> | Thickness : <u>0.280</u> | ID, in. : <u>6</u> |
| Top Depth, ft. : <u>0</u> | Bottom Depth, ft. : <u>100</u> | |

Borehole Notes:

According to the driller's log, a starter casing of unknown dimensions was installed to a depth of 21 ft but was not perforated or grouted. The top of the casing, which is the zero reference for the SGLS, is approximately 2 in. above the tank farm grade. The casing thickness is presumed to be 0.280 in., on the basis of published thickness for schedule-40, 6-in. steel tubing.

Equipment Information

| | | |
|-----------------------------------|---|--|
| Logging System : <u>1</u> | Detector Type : <u>HPGe</u> | Detector Efficiency: <u>35.0 %</u> |
| Calibration Date : <u>04/1996</u> | Calibration Reference : <u>GJPO-HAN-5</u> | Logging Procedure : <u>P-GJPO-1783</u> |

Log Run Information

| | | |
|---------------------------------|----------------------------------|---------------------------------------|
| Log Run Number : <u>1</u> | Log Run Date : <u>06/19/1996</u> | Logging Engineer: <u>Gary Lekvold</u> |
| Start Depth, ft.: <u>0.0</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>22.5</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |

| | | |
|---------------------------------|----------------------------------|---------------------------------------|
| Log Run Number : <u>2</u> | Log Run Date : <u>06/20/1996</u> | Logging Engineer: <u>Gary Lekvold</u> |
| Start Depth, ft.: <u>98.5</u> | Counting Time, sec.: <u>100</u> | L/R : <u>L</u> Shield : <u>N</u> |
| Finish Depth, ft. : <u>21.5</u> | MSA Interval, ft. : <u>0.5</u> | Log Speed, ft/min.: <u>n/a</u> |



Borehole

40-03-01

Log Event A

Analysis Information

Analyst : S.D. Barry

Data Processing Reference : P-GJPO-1787

Analysis Date : 03/10/1997

Analysis Notes :

This borehole was logged in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The only man-made radionuclide detected around this borehole was Cs-137. The presence of Cs-137 was measured at the ground surface and between 14.5 and 15 ft. The maximum calculated Cs-137 concentration was 7.8 pCi/g at the ground surface.

The K-40 log plot shows regions of slightly elevated concentration values from 45 to 50 ft and 52 to 59 ft. From 55 to 58 ft, the Th-232 log plot shows a region of elevated concentration. Beginning at about 66 ft, the KUT concentration values increase sharply.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Report for tank S-103.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data.